BIOCHEMICAL AND BIOPHYSICAL Research Communications

EDITORS

John N. Abelson
Ernesto Carafoli
I.C. Gunsalus
Akira Ichihara
James D. Jamieson
Yasuo Kagawa
M. Daniel Lane
William J. Lennarz
Masami Muramatsu
Claude Paoletti
Bennett M. Shapiro
Martha Vaughan

Volume 174 • 1991

ACADEMIC PRESS, INC.

Harcourt Brace Jovanovich, Publishers

San Diego New York Boston
London Sydney Tokyo Toronto

Copyright © 1991 by Academic Press, Inc.

ALL RIGHTS RESERVED

No part of this publication may be reproduced or transmitted in any form, or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per copy fee through the Copyright Clearance Center, Inc. (27 Congress Street, Salem, Massachusetts 01970), for copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Copy fees for pre-1991 articles are as shown on the article title pages; if no fee code appears on the title page, the copy fee is the same as for current articles.

0006-291X/91 $1.50

MADE IN THE UNITED STATES OF AMERICA

This journal is printed on acid-free paper.

BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS

CONTENTS

Volume 174, Number 1, January 15, 1991

Inhibition of *ras*-Induced Germinal Vesicle Breakdown in *Xenopus* oocytes by *rap*-1B *Michael J. Campa, Kwen-Jen Chang, Luis Molina y Vedia, Bryan R. Reep, and Eduardo G. Lapetina* 1

Elafin Is a Potent Inhibitor of Proteinase 3 *Oliver Wiedow, Jens Lüdemann, and Bert Utecht* 6

1,25 $(OH)_2$ Vitamin D_3 Attenuates the Loss of Resistance Artery Contractile Function Associated with Incubation in Culture Media *Hong Xue, David A. McCarron, and Richard D. Bukoski* 11

Kinetics of TNF, IL-6, and IL-8 Gene Expression in LPS-Stimulated Human Whole Blood *L. E. DeForge and D. G. Remick* 18

Effects of Chronic Exposure of NG108-15 Cells to Morphine or Ethanol on Binding of Nuclear Factors to cAMP-Response Element (CRE) *Takeshi Osugi, Hideo Taniura, Mitsushi Ikemoto, and Naomasa Miki* 25

Purification of Monomeric Agmatine Iminohydrolase from Soybean *Kyung Hee Park and Young Dong Cho* 32

Hormone Controlled Phosphorylation and Degradation of CYP2B1 and CYP2E1 in Isolated Rat Hepatocytes *Inger Johansson, Erik Eliasson, and Magnus Ingelman-Sundberg* 37

Biodegradation of Triiodophenol by Cell-Free Extracts of a Pentachlorophenol-Degrading *Flavobacterium* sp. *L. Xun and C. S. Orser* 43

Basic Fibroblast Growth Factor Is a Substrate for Phosphorylation by Human Neutrophil Ecto-Protein Kinase Activity *Keith M. Skubitz and Said A. Goueli* 49

Inhibition of HIV-Reverse Transcriptase Activity by Asterriquinone and Its Analogues *Katsuhiko Ono, Hideo Nakane, Sakae Shimizu, and Saburo Koshimura* 56

Conformational Transitions of Detergent-Solubilized Na,K-ATPase Are Conveniently Monitored by the Fluorescent Probe 6-Carboxy-Eosin *Mikael Esmann* 63

Isolation and Partial Characterization of a Cystine-Rich Basic Heparin-Binding Protein from Bovine Platelets *Erzsébet Szabó and László Muszbek* 70

Inhibitory Effect of Okadaic Acid on Carbachol-Evoked Secretion of Catecholamines in Cultured Bovine Adrenal Medullary Cells *Nobuyuki Yanagihara, Yumiko Toyohira, Yoshiro Koda, Akihiko Wada, and Futoshi Izumi* 77

Isolation and Partial Characterization of the Formyl Peptide Receptor Components on Human Neutrophils *Ernesto De Nardin, Stephen J. Radel, and Robert J. Genco* 84

Sequestration of a Hepatocyte Growth Factor in Extracellular Matrix in Normal Adult Rat Liver *Aki Masumoto and Noboru Yamamoto* 90

Bone Morphogenetic Protein-2 Stimulates Alkaline Phosphatase Activity and Collagen Synthesis in Cultured Osteoblastic Cells, MC3T3-E1 *Yoh Takuwa, Chizuko Ohse, Elizabeth A. Wang, John M. Wozney, and Kamejiro Yamashita* 96

Effect of Substitution of Hydrogen Oxide by Deuterium Oxide on Thermotropic Transition between the Interdigitated Gel Phase and the Ripple Phase of Dihexadecylphosphatidylcholine *Kazuo Ohki* 102

Effect of Lymphokine-Activated Killer Cells on Human Retinoblastoma Cells (Y-79) *in Vitro:* Enhancement of the Activity by a Polysaccharide Preparation, Krestin *Yasuhiro Hayashida, Shinji Kurimoto, and Naoki Yamamoto* 107

Galactose-Dependent Expression of the Recombinant Ca^{2+}-Binding Photoprotein Aequorin in Yeast *Junko Nakajima-Shimada, Hidetoshi Iida, Frederick I. Tsuji, and Yasuhiro Anraku* 115

Activation of Phosphatidylinositol-3-kinase by Insulin Is Mediated by both A and B Human Insulin Receptor Types *José M. Carrascosa, Beate Vogt, Axel Ullrich, and Hans U. Häring* 123

Increased Secretion of Brain Natriuretic Peptide and Atrial Natriuretic Peptide, but Not Sufficient to Induce Natriuresis in Rats with Nephrotic Syndrome *Naoto Yokota, Yoshitaka Yamamoto, Masahito Aburaya, Kazuo Kitamura, Tanenao Eto, Kenji Kangawa, Naoto Minamino, Hisayuki Matsuo, and Kenjiro Tanaka* 128

Up-Regulation of Fibroblast Growth Factor (FGF) Receptor mRNA Levels by Basic FGF or Testosterone in Androgen-Sensitive Mouse Mammary Tumor Cells *Hiroshi Saito, Soji Kasayama, Haruhiko Kouhara, Keishi Matsumoto, and Bunzo Sato* 136

Isolation and Identification of C-Type Natriuretic Peptide in Chicken Brain *Jerome J. Arimura, Naoto Minamino, Kenji Kangawa, and Hisayuki Matsuo* 142

Expression of Vasopressin V2 Receptor in *Xenopus laevis* Oocytes by Porcine Kidney Cell Line (LLC-PK1) Messenger RNA *Koji Kimura* 149

The Production by Alternate Splicing of Two mRNAs Differing by One Codon Could Be an Intrinsic Property of Neuroendocrine Protein 7B2 Gene Expression in Man *Luc Paquet, Claude Lazure, Nabil G. Seidah, Michel Chrétien, and Majambu Mbikay* 156

^{19}F NMR Study of the Interactions of Fluoride with Superoxide Dismutase and Hemoglobin in Erythrocytes *Marina Scarpa, Paolo Viglino, Fabio Vianello, and Adelio Rigo* 163

Correlation of the Steady-State RNA Levels among the α-Subunit of Prolyl 4-Hydroxylase and the α1 and α2 Chains of the Type I Collagen during Growth of Chicken Embryo Tendon Fibroblasts *James A. Bussuk and Richard A. Berg* 169

A Simple and Rapid Method for the Detection of RNA in Formalin-Fixed, Paraffin-Embedded Tissues by PCR Amplification *F. v. Weizsäcker, S. Labeit, H. K. Koch, W. Oehlert, W. Gerok, and H. E. Blum* 176

Thrombin Effects on Osteoblastic Cells. II. Structure–Function Relationships *Dimitris N. Tatakis, Calogero Dolce, Rosemary Dziak, and John W. Fenton II* 181

Purification and Some Properties of a Phospholipase A_2 from Bovine Platelets *Dae Kyong Kim, Pann Ghill Suh, and Sung Ho Ryu* 189

Clathrin-Coated Vesicles from Human Placenta Contain GTP-Binding Proteins *James M. Lenhard, Marilyn Aach Levy, and Philip D. Stahl* 197

Proteinase B Is, Indeed, Not Required for Chitin Synthetase 1 Function in *Saccharomyces cerevisiae* *Sanford J. Silverman, J. Andrew Shaw, and Enrico Cabib* 204

SecA, an Essential Component of the Secretory Machinery of *Escherichia coli*, Exists as Homodimer *Mitsuru Akita, Akeo Shinkai, Shin-ichi Matsuyama, and Shoji Mizushima* 211

Oxygen Radical Production during Ischemia-Reperfusion in the Isolated Perfused Rat Liver as Monitored by Luminol-Enhanced Chemiluminescence
Masahiro Okuda, Iwao Ikai, Britton Chance, and Chellappa Kumar 217

Genomic Organization of the α Chain of the Human C4b-Binding Protein Gene
Teijiro Aso, Seiichi Okamura, Tetsuya Matsuguchi, Norihiro Sakamoto, Teizo Sata, and Yoshiyuki Niho 222

Endothelin-3 Stimulates Production of Endothelium-Derived Nitric Oxide via Phosphoinositide Breakdown
Toshiaki Emori, Yukio Hirata, Kazuo Kanno, Kazuki Ohta, Satoru Eguchi, Taihei Imai, Masayoshi Shichiri, and Fumiaki Marumo 228

The Peripheral Lymph Node Homing Receptor, LECAM-1, Is Involved in CD18-Independent Adhesion of Human Neutrophils to Endothelium
R. Hallmann, M. A. Jutila, C. W. Smith, D. C. Anderson, T. K. Kishimoto, and E. C. Butcher 236

Molecular Insight into the Asymmetric Distribution of Pathogenetic Human Mitochondrial DNA Deletions
Donald R. Johns and David R. Cornblath 244

Recombinant Human Interleukin-1 Inhibits Plasminogen Activator Inhibitor-1 (PAI-1) Production by Human Articular Cartilage and Chondrocytes
Ian K. Campbell, Karena Last, Ulrike Novak, Leif R. Lund, and John A. Hamilton 251

Differential Modulation by N^4,2′-*O*-Dibutyryl Cytidine 3′:5′-Cyclic Monophosphate of Neutrophil Activation
Jürgen Ervens and Roland Seifert 258

Interleukin-1β, Tumor Necrosis Factor, and Forskolin Stimulate the Synthesis and Secretion of Group II Phospholipase A_2 in Rat Mesangial Cells
Casper Schalkwijk, Josef Pfeilschifter, Fritz Märki, and Henk van den Bosch 268

Effects of Estrogens of MCF-7 Cells: Positive or Negative Regulation by the Nature of the Ligand–Receptor Complex
George E. Swaneck and Jack Fishman 276

The Leader Sequence of Streptokinase Is Responsible for Its Post-translational Carboxyl-Terminal Cleavage *Seung Kook Park, Byeong Ryong Lee, and Si Myung Byun* 282

Growth Inhibition of Human Keratinocytes by Antisense c-myc Oligomer Is Not Coupled to Induction of Differentiation
Makoto Hashiro, Kunio Matsumoto, Hidenobu Okumura, Koji Hashimoto, and Kunihiko Yoshikawa 287

Demonstration of Heat Production Associated with Spreading Depression in the Amphibian Retina *I. Tasaki and P. M. Byrne* 293

Normal Human Chromosome 5, on Which a Familial Adenomatous Polyposis Gene Is Located, Has Tumor-Suppressive Activity
Yuji Hoshino, Izumi Horikawa, Mitsuo Oshimura, and Yasuhito Yuasa 298

Homologous Recombination in Bovine Papillomavirus Shuttlevector: Effect of Relative Orientation of Substrate Sequences
Ayako Naito, Yoshihiro Kitamura, and Hiroshi Yoshikura 305

Inhibitory Effect of Porphyrins on the Proliferation of Mouse Spleen Lymphocytes *in Vitro* *H. Stepien, J. Kunert-Radek, A. Stanisz, G. Zerek-Melen, and M. Pawlikowski* 313

Demonstration of Extrinsic DNA from Immune Complexes in Plasma of a Patient with Systemic Lupus Erythematosus *Kunihiko Terada, Eiji Okuhara, Yoshihiko Kawarada, and Susumu Hirose* 323

Hepatocyte Growth Factor/Hepatopoietin A Stimulates the Growth of Rat Kidney Proximal Tubule Epithelial Cells (RPTE), Rat Nonparenchymal Liver Cells, Human Melanoma Cells, and Mouse Keratinocytes and Stimulates Anchorage-Independent Growth of SV-40 Transformed RPTE
Mikio Kan, Guohong Zhang, Raza Zarnegar, George Michalopoulos, Yoshinari Myoken, Wallace L. McKeehan, and James L. Stevens 331

Endothelin-3 Inhibits Prolactin and Stimulates LH, FSH, and TSH Secretion from Pituitary Cell Culture *Béla Kanyicska, Thomas P. Burris, and Marc E. Freeman* 338

Phosphorylase Kinase: Development of a Continuous Fluorometric Assay for the Determination of Catalytic Activity
Dean A. Malencik, Zhizhuang Zhao, and Sonia R. Anderson 344

Expression of Soluble Guanylate Cyclase Activity Requires Both Enzyme Subunits *Wolfgang A. Buechler, Masaki Nakane, and Ferid Murad* 351

P460 of Hydroxylamine Oxidoreductase of *Nitrosomonas europaea:* Soret Resonance Raman Evidence for a Novel Heme-like Structure
Kristoffer K. Andersson, Gerald T. Babcock, and Alan B. Hooper 358

Solubilization of Prostaglandin D_2 Binding Protein from Porcine Temporal Cortex
Hiroshi Morii and Yasuyoshi Watanabe 364

The B Subunit of Cholera Toxin Enhances DNA Synthesis in Rat Hepatocytes Induced by Insulin and Epidermal Growth Factor
Hiroshi Mitsui, Masao Iwamori, Naoaki Hashimoto, Haruki Yamada, Yusei Ikeda, Gotaro Toda, Kiyoshi Kurokawa, and Yoshitaka Nagai 372

Regional Expression of the Nerve Growth Factor Gene Family in Rat Brain during Development *Yoshihiko Kaisho, Asae Shintani, Yoshitaka Ono, Koki Kato, and Koichi Igarashi* 379

Quinone-Mediated Electron Transport System in the Filarial Parasite *Setaria digitata*
K. R. Santhamma and R. Kaleysa Raj 386

Differential Distribution of the mRNA Encoding Two Isoforms of the Catalytic Subunit of Calcineurin in the Rat Brain
Tomoaki Takaishi, Naoaki Saito, Takayoshi Kuno, and Chikako Tanaka 393

Development of Chicken Antibodies toward the Human Thyrotropin Receptor Peptides and Their Bioactivities
Masayuki Ohmori, Toyoshi Endo, and Toshimasa Onaya 399

Structural Analysis of a Mature *hst*-1 Protein with Transforming Growth Factor Activity *Kiyoshi Miyagawa, Sadao Kimura, Teruhiko Yoshida, Hiromi Sakamoto, Fumimaro Takaku, Takashi Sugimura, and Masaaki Terada* 404

Volume 174, Number 2, January 31, 1991

Interleukin-1 Induced Gene Expression of Neutrophil Activating Protein (Interleukin-8) and Monocyte Chemotactic Peptide in Human Synovial Cells
Deborah DeMarco, Steven L. Kunkel, Robert M. Strieter, Michael Basha, and Robert B. Zurier 411

Developmental and Tissue-Specific Expression of Rat T-Kininogen
Elizabeth A. Mann and Jerry B. Lingrel 417

Platelet-Activating Factor Affects Cytosolic Free Calcium Concentration and Prolactin Secretion in the GH_4C_1 Rat Pituitary Cells
Junping Yang and Armen H. Tashjian, Jr. 424

Substrate Specificity of Tissue-Type and Urokinase-Type Plasminogen Activators
Dingeman C. Rijken and Eleonore Groeneveld 432

A 60-kDa Phosphorylated Protein from Fetal Human Bone
Masanori Suzuki, Akiyoshi Uchiyama, Kazuhiro Kushida, Kentarou Horiuchi, Masaharu Takahashi, and Tetsuo Inoue 439

Endothelin Converting Enzyme of Bovine Carotid Artery Smooth Muscles
Yoshio Hioki, Kenji Okada, Hiromi Ito, Kenji Matsuyama, and Mitsuo Yano 446

Signal Transduction through the Vasoactive Intestinal Peptide Receptor Stimulates Phosphorylation of the Tyrosine Kinase $PP60^{C\text{-}SRC}$
Shay-Whey M. Koh 452

Molecular Cloning and Sequencing of the Epidermal Cell Differentiation Inhibitor Gene from *Staphylococcus aureus* *S. Inoue, M. Sugai, Y. Murooka, S.-Y. Paik, Y.-M. Hong, H. Ohgai, and H. Suginaka* 459

Vitronectin in the Substratum of Endothelial Cells Is Cross-Linked and Phosphorylated *David C. Sane, Tammy L. Moser, and Charles S. Greenberg* 465

Tissue Distribution and Species Difference of the Brain Type Glucose Transporter (GLUT3) *Hideki Yano, Yutaka Seino, Nobuya Inagaki, Yoshinori Hinokio, Taizo Yamamoto, Koichiro Yasuda, Kazuhiro Masuda, Yoshimichi Someya, and Hiroo Imura* 470

Expression of Protein Disulfide Isomerase in Cultured Rat Liver Epithelial Cells Is Unrelated to the Growth Inhibitory Effect of TGF-β1
Ming-Sound Tsao and Joe W. Grisham 478

Transformed Rodent Cells Exhibit Increased Resistance to the Carboxylic Ionophores, Monensin and Nigericin *Robert G. Liteplo* 483

N-Carboxymethylchitosan-*N*,*O*-sulfate as an Anti-HIV-1 Agent
Miguel A. Gama Sosa, Fatemeh Fazely, John A. Koch, Sharon V. Vercellotti, and Ruth M. Ruprecht 489

Evidence for an Inactive Plasma Membrane-Associated Precursor of Active Cytoplasmic Ornithine Decarboxylase in Developing Embryos of *Musca domestica* *Stan L. Lilleberg, S. Derek Killilea, David A. Vaske, Roger A. Leopold, and Robert B. Sparks, Jr.* 497

Molecular Cloning of Rat Monocyte Chemoattractant Protein-1 (MCP-1) and Its Expression in Rat Spleen Cells and Tumor Cell Lines
Teizo Yoshimura, Motohiro Takeya, Kiyoshi Takahashi, and Edward J. Leonard 504

Over-Expression of Superoxide Dismutase and Lack of Surface-Thiols in Spermatozoa: Inherent Defects in Oligospermia *Sumita Sinha, Pradeep Kumar G., Malini Laloraya, and Deepak Warikoo* 510

Thermal Stability of Hemoglobin Cross-linked in the T-State by Bis (3,5-dibromosalicyl) Fumarate *Thao Yang and Kenneth W. Olsen* 518

The Production of Phosphatidylinositol Trisphosphate Is Stimulated by Thrombin in Human Platelets *Roger D. Nolan and Eduardo G. Lapetina* 524

Molecular Cloning and Expression of a Human Brain Inositol 1,4,5-Trisphosphate 3-Kinase *Kazunaga Takazawa, Jason Perret, Jacques E. Dumont, and Christophe Erneux* 529

Ca^{2+}-Dependent Amylase Secretion from Pancreatic Acinar Cells Occurs without Activation of Phospholipase C-Linked G-Proteins
Philip J. Padfield, Tie-Gang Ding, and James D. Jamieson 536

Purification of a Novel 55-kDa HeLa Cell Nuclear DNA-Binding Protein
Wei-Wei Zhang, Jaume Farrés, and Harris Busch 542

The Protective Effect of Atrial Natriuretic Peptide (ANP) on Cells Damaged by Oxygen Radicals Is Mediated through Elevated CGMP Levels, Reduction of Calcium Inflow, and Probably G-Proteins *Raimund Pella* 549

Tissue and Subcellular Distributions of an Inhibitory GDP/GTP Exchange Protein (GDI) for *smg* p25A by Use of Its Antibody
Hidetaro Nonaka, Kozo Kaibuchi, Kazuya Shimizu, Juro Yamamoto, and Yoshimi Takai 556

Immunocytochemical Localization of Ubiquitin-Activating Enzyme in the Cell Nucleus *James C. Cook and P. Boon Chock* 564

β-Amyloid from Alzheimer Disease Brains Inhibits Sprouting and Survival of Sympathetic Neurons
A. E. Roher, M. J. Ball, S. V. Bhave, and A. R. Wakade 572

Inactivation of Human Placenta Glutathione S-Transferase by SH/SS Exchange Reaction with Biological Disulfides *Tsutomu Nishihara, Hideki Maeda, Kei-ichi Okamoto, Takuya Oshida, Tadashi Mizoguchi, and Tomoyuki Terada* 580

A Motif Found in Propeptides and Prohormones That May Target Them to Secretory Vesicles *John S. Kizer and Alexander Tropsha* 586

Isolation of Human Brain Protein Kinase C. Evidence for Kinase C Catalytic Fragment Modulating G Protein-GTPase Activity
Claude Sauvage, Christopher D. Cash, and Michel Maitre 593

Low Molecular Weight GTP-Binding Proteins Associated with Zymogen Granule Membranes from Rat Pancreas *Philip J. Padfield and James D. Jamieson* 600

Influence of Lithium on Second Messenger Accumulation in NG108-15 Cells
Brigitte A. Brami, Ubaldo Leli, and George Hauser 606

The Biosynthesis of Endothelin-1 by Human Polymorphonuclear Leukocytes
William C. Sessa, Semiko Kaw, Markus Hecker, and John R. Vane 613

Inhibition of Methylcoenzyme M Methylreductase by a Uridine 5′-Diphospho-*N*-acetylglucosamine Derivative *Frank D. Sauer* 619

Salivary Histatin as an Inhibitor of a Protease Produced by the Oral Bacterium *Bacteroides gingivalis* *Makoto Nishikata, Takashi Kanehira, Hourei Oh, Hiroshi Tani, Mariko Tazaki, and Yoshinori Kuboki* 625

Yeast Proteins with Reactivity to Antibodies Elicited against Mammalian Apolipoproteins *G. A. Keesler, S. Moore, D. C. Usher, and L. W. Parks* 631

Specific Gangliosides Increase Rapidly in Rat Liver following Partial Hepatectomy *Jordan B. Fishman, Michael Cahill, Peter Morin, Michael McCrory, Nancy L. R. Bucher, and M. David Ullman* 638

Stimulation of Macrophage Growth and Multinucleated Cell Formation in Rat Bone Marrow Cultures by Insulin-like Growth Factor I
Ben A. A. Scheven and Nicola J. Hamilton 647

A pH-Dependent Phospholipase A_2 Contributes to Loss of Plasma Membrane Integrity during Chemical Hypoxia in Rat Hepatocytes
D. Corinne Harrison, John J. Lemasters, and Brian Herman 654

HMG 14 and Protamine Enhance Ligation of Linear DNA to Form Linear Multimers: Phosphorylation of HMG 14 at Ser 20 Specifically Inhibits Intermolecular DNA Ligation *Lowell G. Sheflin, Nancy W. Fucile, and Stephen W. Spaulding* 660

Identification of the NADH-Binding Subunit of Energy-Transducing NADH-Quinone Oxidoreductase (NDH-1) of Thermus Thermophilus HB-8
Xue-Min Xu and Takao Yagi 667

IGFBP-1, an Insulin-like Growth Factor Binding Protein, Is a Cell Growth Inhibitor *L. Liu, A. Brinkman, C. Blat, and L. Harel* 673

Deoxycytidine Is Salvaged Not Only into DNA but Also into Phospholipid Precursors. III. dCDP-Diacylglycerol Formation in Tonsillar Lymphocytes
Tatjana Spasokukotskaja, J. Taljanidisz, M. Sasvári-Székely, and M. Staub 680

Cell Populations Synthesizing Cartilage Proteoglycan Core Protein in the Early Chick Limb Bud *Panagiotis A. Tsonis and Edwin Walker* 688

Involvement of Superoxide Dismutase in Heat-Induced Stimulation of Photosystem I-Mediated Oxygen Uptake
F. Lajkó, A. Kadioglu, and G. Garab 696

Human Liver Alcohol Dehydrogenases Catalyze the Oxidation of the Intermediary Alcohols of the Shunt Pathway of Mevalonate Metabolism
Wing-Ming Keung 701

A New Heparin Binding Protein Regulated by Retinoic Acid from Chick Embryo
Daniel Raulais, Odile Lagente-Chevallier, Catherine Guettet, Delphine Duprez, Yves Courtois, and Marc Vigny 708

Amylin Activates Glycogen Phosphorylase and Inactivates Glycogen Synthase via a cAMP-Independent Mechanism
Rhonda Oetting Deems, Richard W. Deacon, and Douglas A. Young 716

Transactivation of the Human Insulin Receptor Gene by the CAAT/Enhancer Binding Protein *Catherine McKeon and Thang Pham* 721

Lipoxygenation in Rat Brain? *Hee-Yong Kim, Shigeki Sawazaki, and Norman Salem, Jr.* 729

Mapping of Carbohydrate Sites on the Human Insulin Receptor
G. R. Hayes, J. N. Livingston, and D. H. Lockwood 735

Delineation of Electric and Magnetic Field Effects of Extremely Low Frequency Electromagnetic Radiation on Transcription
James J. Greene, William J. Skowronski, J. Michael Mullins, Roland M. Nardone, Miguel Penafiel, and Robert Meister 742

Somatostatin Inhibits the Nicotinic Receptor-Activated Inward Current in Guinea Pig Chromaffin Cells *Masumi Inoue and Hirosi Kuriyama* 750

Prostaglandins Antagonize Fibroblast Proliferation Stimulated by Tumor Necrosis Factor *Takamitsu Hori, Yoichi Yamanaka, Makio Hayakawa, Sayumi Shibamoto, Masafumi Tsujimoto, Naoto Oku, and Fumiaki Ito* 758

Plasma B-Cell Tropin ($ACTH_{22-39}$) Concentrations in Lean and Obese (ob/ob) Mice and Lean and Obese (fa/fa) Zucker Rats *John L. Morton, Michelle Davenport, and Simon J. Dunmore* 767

Phosphorylation of Tyrosines 1158, 1162, and 1163 on a Synthetic Dodecapeptide by the Insulin Receptor Protein-Tyrosine Kinase
Martin Dickens, Jeremy M. Tavaré, Beatrice Clack, Leland Ellis, and Richard M. Denton 772

Phosphoramidon Inhibits the Intracellular Conversion of Big Endothelin-1 to Endothelin-1 in Cultured Endothelial Cells *Tatsuya Sawamura, Yoshitoshi Kasuya, Yohichi Matsushita, Nobuhiro Suzuki, Osamu Shinmi, Naoya Kishi, Yoshiki Sugita, Masashi Yanagisawa, Katsutoshi Goto, Tomoh Masaki, and Sadao Kimura* 779

Cross-linking of Substrates Occurs Exclusively to the p66 Subunit of Heterodimeric HIV-1 Reverse Transcriptase *Nancy Cheng, George R. Painter, and Phillip A. Furman* 785

A Calcium-Activated Protease from Alzheimer's Disease Brain Cleaves at the N-Terminus of the Amyloid β-Protein *Carmela R. Abraham, James Driscoll, Huntington Potter, William E. Van Nostrand, and Paul Tempst* 790

Induction of Putative New Cytochrome P450 Isozyme in Rat Liver by 2-Amino-1-methyl-6-phenylimidazo[4,5-*b*]pyridine *Hiroko Adachi, Masakuni Degawa, Shin-ichi Miura, Yoshiyuki Hashimoto, Takashi Sugimura, and Hiroyasu Esumi* 797

A 17-bp Insertion and a Phe215→Cys Missense Mutation in the Dihydrolipoyl Transacylase (E2) mRNA from a Thiamine-Responsive Maple Syrup Urine Disease Patient WG-34 *Charles W. Fisher, Kim S. Lau, Carolyn R. Fisher, R. Max Wynn, Rody P. Cox, and David T. Chuang* 804

Characterization of $\alpha_2\beta_2$ and α_2 Forms of Kinesin *David D. Hackney, Joelle D. Levitt, and Douglas D. Wagner* 810

Cathepsin D Gene of Human MCF7 Cells Contains Estrogen-Responsive Sequences in Its 5′ Proximal Flanking Region *Vincent Cavailles, Patrick Augereau, and Henri Rochefort* 816

The Estrogen-Regulated Destabilization of *Xenopus* Albumin mRNA Is Independent of Translation *John E. Moskaitis, Susan W. Buzek, Ricardo L. Pastori, and Daniel R. Schoenberg* 825

Hepatocyte Growth Factor Is a Potent Mitogen for Cultured Rabbit Renal Tubular Epithelial Cells *Tsukasa Igawa, Shigeru Kanda, Hiroshi Kanetake, Yutaka Saitoh, Akira Ichihara, Yumiko Tomita, and Toshikazu Nakamura* 831

Specific Uptake of Asialofetuin-Tacked Liposomes Encapsulating Interferon-γ by Human Hepatoma Cells and Its Inhibitory Effect on Hepatitis B Virus Replication *Hiroshi Ishihara, Yasuyuki Hayashi, Toshifumi Hara, Yukihiko Aramaki, Seishi Tsuchiya, and Katsuro Koike* 839

High Level Expression and Purification of dThymidine Diphospho-*D*-glucose 4,6-Dehydratase (*rfbB*) from *Salmonella* Serovar Typhimurium LT2 *Lajwant K. Romana, Fernando S. Santiago, and Peter R. Reeves* 846

Mutagenesis of Human Fibrinogen γ Chain 259-411 Synthesized in *Escherichia coli*: Further Characterization of the Role of the Disulfide Bond CYS326-CYS339 in Calcium Binding *Mark G. Bolyard and Susan T. Lord* 853

Mitochondrial DNA Mutations in Mitochondrial Myopathy, Encephalopathy, Lactic Acidosis, and Stroke-like Episodes (MELAS) *Masashi Tanaka, Hidekazu Ino, Kinji Ohno, Toshihiro Ohbayashi, Shin-ichiro Ikebe, Tadashi Sano, Takashi Ichiki, Masanori Kobayashi, Yoshiro Wada, and Takayuki Ozawa* 861

α-1-Stimulated Phosphoinositide Breakdown in Cultured Cardiomyocytes: Diacylglycerol Production and Composition in Docosahexaenoic Acid-Supplemented Cells *Alessandra Bordoni, Pier Luigi Biagi, Carlo Alfonso Rossi, and Silvana Hrelia* 869

Structural Flexibility of Aib-Containing Peptides: The N-Terminal Tripeptide of Trichotoxin *Renate Gessmann, Hans Brueckner, and Michael Kokkinidis* 878

IGG-Stimulated and LPS-Stimulated Monocytes Elaborate Transforming Growth Factor Type β (TGF-β) in Active Form *L. Schalch, C. Rordorf-Adam, J. R. Dasch, and T. W. Jungi* 885

Suppressive Effects of Dehydroepiandrosterone and 3β-Methyl-androst-5-en-17-one on Attack toward Lactating Female Intruders by Castrated Male Mice. II. Brain Neurosteroids *J. Young, C. Corpéchot, M. Haug, S. Gobaille, E. E. Baulieu, and P. Robel* 892

A Model for Histone H5-DNA Interaction: Simultaneous Minor and Major Groove Binding *Alain Segers, Lode Wyns, and Ignace Lasters* 898

Isolation and Properties in Culture of Human Adrenal Capillary Endothelial Cells *Jonathan Fawcett, Adrian L. Harris, and Roy Bicknell* 903

Activation of Cromakalim of Pre- and Postsynaptic ATP-Sensitive K^+ Channels in Substantia Nigra *Michael A. Häusser, Jan R. de Weille, and Michel Lazdunski* 909

Blockade of α- and β-Adrenergic Receptors Can Prevent Stimulation of Liver Ornithine Decarboxylase Activity by Glucocorticoid or Laparatomy *Serenella Astancolle, Pierpaola Davalli, and Arnaldo Corti* 915

Ionophore A23187-Induced Protein-Tyrosine Phosphorylation of Human Platelets: Possible Synergism between Ca^{2+} Mobilization and Protein Kinase C Activation *Hiroshi Takayama, Toru Nakamura, Shigeru Yanagi, Takanobu Taniguchi, Shun-ichi Nakamura, and Hirohei Yamamura* 922

Effect of Cell Density on Induction of Growth Hormone Receptors by Dexamethasone in Primary Cultured Rat Hepatocytes *Shingo Niimi, Takao Hayakawa, and Akira Tanaka* 928

Transcription of *fra*-2 mRNA and Phosphorylation of Fra-2 Protein Are Stimulated by Serum *Tetsuo Yoshida, Hironori Sato, and Hideo Iba* 934

β-Subunits of Equine Chorionic Gonadotropin and Lutenizing Hormone with an Identical Amino Acid Sequence Have Different Asparagine-Linked Oligosaccharide Chains *Taei Matsui, Hiromu Sugino, Mari Miura, George R. Bousfield, Darrell N. Ward, Koiti Titani, and Tsuguo Mizuochi* 940

The Expression of Two Isoforms of the Human Fibroblast Growth Factor Receptor (*flg*) Is Directed by Alternative Splicing *Hiroko Fujita, Mitsuhiro Ohta, Toshisuke Kawasaki, and Nobuyuki Itoh* 946

Endothelin Stimulates Degradation of Phospholipids in Isolated Rat Hearts *M. Renuka Prasad* 952

Catenated Dimers and Knotted DNA Structures: Putative Intermediates in the Replication of *T. cruzi* Kinetoplast Minicircle DNA *Manuel S. Valenzuela, Smriti Bardhan, M. Raja S. Krishnamani, and Kazi A. I. Siddiqui* 958

The Effect of Micromolar Ca^{2+} on the Activities of the Different Na^+/K^+-ATPase Isozymes in the Rat Myometrium *Agnes Turi, Janos Somogyi, and Nandor Mullner* 969

The Isolated Cytoplasmic Domain of Band 3 Binds Calcium at Physiological Salt Concentration and Neutral pH *James M. Salhany and Karen A. Cordes* 975

Expression of Human Alzheimer Amyloid Precursor Protein in Insect Cells *Narayan Ramakrishna, Pothana Saikumar, Anna Potempska, Henryk M. Wisniewski, and David L. Miller* 983

Endogenous Biotinylated Proteins in *Dictyostelium discoideum* *Michael A. Lydan and Danton H. O'Day* 990

Purification and Partial Sequence Analysis of the Soluble Catechol-*O*-methyltransferase from Human Placenta: Comparison to the Rat Liver Enzyme *Carola Tilgmann and Nisse Kalkkinen* 995

Increased Gene Expression of Matrix Metalloproteinase-3 (Stromelysin) in Skin Fibroblasts from Patients with Severe Recessive Dystrophic Epidermolysis Bullosa *Daisuke Sawamura, Takamitsu Sugawara, Isao Hashimoto, Leena Bruckner-Tuderman, Daisaburo Fujimoto, Yasunori Okada, Nobuo Utsumi, and Hideo Shikata* 1003

A Quantifiable Phenotype of Viral Propagation *John Yin* 1009

Demonstration of an Active Component of Inter-α-Trypsin Inhibitor in the Brains of Alzheimer Type Dementia *Etsuo Yoshida, Masahiro Yoshimura, Yuji Ito, and Hisashi Mihara* 1015

Expression of mRNA for Activin-Binding Protein (Follistatin) during Early Embryonic Development of *Xenopus laevis* *Kosuke Tashiro, Ryutaro Yamada, Misaki Asano, Makoto Hashimoto, Masami Muramatsu, and Koichiro Shiokawa* 1022

Tetrahymena 14-NM Filament-Forming Protein Has Citrate Synthase Activity *Osamu Numata, Tohru Takemasa, Ibuki Takagi, Masafumi Hirono, Hisashi Hirano, Joe Chiba, and Yoshio Watanabe* 1028

The Structure of the Brain-Specific Rat Aldolase C Gene and Its Regional Expression *Tsunehiro Mukai, Hitomi Yatsuki, Sadahiko Masuko, Yuji Arai, Keiichiro Joh, and Katsuji Hori* 1035

Synaptic and Extra-Synaptic Distribution of Histamine H_1-Receptors in Rat and Guinea Pig Brains *Hiroyuki Mizuguchi, Hiroyuki Fukui, Masami Yabumoto, and Hiroshi Wada* 1043

Predominance of Type III over Type I Cell Surface Procollagens in Rat Lung Fibroblasts *Yoshiki Nagai* 1048

ERRATA

Volume 158, Number 3, February 15, 1989: John I. Germershausen, Vincent M. Hunt, Richard G. Bostedor, Philip J. Bailey, John D. Karkas, and Alfred W. Alberts, "Tissue Selectivity of the Cholesterol-Lowering Agents Lovastatin, Simvastatin and Pravastatin in Rats *in Vivo*," pp. 667–675 1053

Volume 173, Number 2, December 14, 1990: Gregory V. Nikiforovich and Victor J. Hruby, "Examination of the Conformational Meaning of 'σ-Address' in the Dermenkephalin Sequence," pp. 521–527 1053

Volume 173, Number 1, November 30, 1990: Laura Hirvas, Pertti Koski, and Martti Vaara, "Primary Structure and Expression of the Ssc-Protein of *Salmonella typhimurium*," pp. 53–59 1054

Volume 174, Number 3, February 14, 1991

Characterization of Cholecystokinin Receptors on Guinea Pig Gastric Chief Cell Members *Takashi Matozaki, Choitsu Sakamoto, Munehiko Nagao, Hogara Nishisaki, Yoshitaka Konda, Osamu Nakano, Kohei Matsuda, Ken Wada, Toshiya Suzuki, and Masato Kasuga* 1055

Regulation of IgE Receptor-Mediated Secretion from RBL-2H3 Mast Cells by GTP Binding Proteins and Calcium *Bridget Smith Wilson, Grace G. Deanin, and Janet M. Oliver* 1064

Potent Anti-angiogenic Action of AGM-1470; Comparison to the Fumagillin Parent *Masami Kusaka, Katsuichi Sudo, Takeshi Fujita, Shogo Marui, Fumio Itoh, Donald Ingber, and Judah Folkman* 1070

Induction of Group II-like Phospholipase A_2 by Lipopolysaccharide in the Liver of BCG-Primed Rat *Masami Inada, Hiromasa Tojo, Sumio Kawata, Seiichiro Tarui, and Mitsuhiro Okamoto* 1077

Purification of Cytosolic 3,5,3′-Triiodo-L-thyronine(T_3)-Binding Protein(CTBP) Which Regulates Nuclear T_3 Translocation *Kiyoshi Hashizume, Satoru Suzuki, Kazuo Ichikawa, and Teiji Takeda* 1084

Animal Model of Systemic Carnitine Deficiency: Analysis in C3H-H-2° Strain of Mouse Associated with Juvenile Visceral Steatosis *Masamichi Kuwajima, Norio Kono, Masahisa Horiuchi, Yasushi Imamura, Akira Ono, Yoshiaki Inui, Sumio Kawata, Tsutomu Koizumi, Jun-ichiro Hayakawa, Takeyori Saheki, and Seiichiro Tarui* 1090

Stoichiometric Interaction of *smg* p21 with Its GDP/GTP Exchange Protein and Its Novel Action to Regulate the Translocation of *smg* p21 between Membrane and Cytoplasm *Shiro Kawamura, Kozo Kaibuchi, Motoki Hiroyoshi, Yutaka Hata, and Yoshimi Takai* 1095

Vitamin E Derivatives as New Potent Inhibitors of Microsomal Lipid Peroxidation *Jean-Paul Battioni, Marc Fontecave, Maryse Jaouen, and Daniel Mansuy* 1103

Mitochondrial DNA Mutation in a Chinese Family with Myoclonic Epilepsy and Ragged-Red Fiber Disease (MERRF) *Kwang-Dar Shih, Tzu-Chen Yen, Cheng-Yoong Pang, and Yau-Huei Wei* 1109

Gastric Cytoprotection by Intracisternal Interleukin-1β in the Rat *André Robert, Esteban Saperas, Weirong Zhang, Adalsteinn S. Olafsson, Cleo Lancaster, Daniel E. Tracey, John G. Chosay, and Yvette Taché* 1117

Isolation and Characterization of Lamprey Rhodopsin cDNA *Osamu Hisatomi, Tatsuo Iwasa, Fumio Tokunaga, and Akira Yasui* 1125

Human Erythrocyte Multicatalytic Proteinase: Activation and Binding to Sulfated Galacto- and Lactosylceramides *Iwao Ohkubo, Shinsei Gasa, Chisato Namikawa, Akira Makita, and Makoto Sasaki* 1133

Deutrium Oxide, Dimethyl Sulfoxide, and Heat Shock Confer Protection against Hydrostatic Pressure Damage in Yeast *Yasuhiko Komatsu, Kaoru Obuchi, Hitoshi Iwahashi, Sunil C. Kaul, Miyuki Ishimura, G. M. Fahy, and W. F. Rall* 1141

The mRNA Levels of Thyrotropin-Receptor, Thyroglobulin, and Thyroid Peroxidase in Neoplastic Human Thyroid Tissues *Kazuyasu Ohta, Toyoshi Endo, and Toshimasa Onaya* 1148

The Lectin Wheat Germ Agglutinin Induces Rapid Protein-Tyrosine Phosphorylation in Human Platelets *Tetsuya Inazu, Takanobu Taniguchi, Shinji Ohta, Susumu Miyabo, and Hirohei Yamamura* 1154

Amino Acids and Peptides. XIV. Laminin Related Peptides and Their Inhibitory Effect on Experimental Metastasis Formation *Koichi Kawasaki, Machiko Namikawa, Tomohiro Murakami, Toyohiko Mizuta, Yuji Iwai, Takao Hama, and Tadanori Mayumi* 1159

Purification of Megakaryocyte Differentiation Activity from a Human Fibrous Histiocytoma Cell Line: N-Terminal Sequence Homology with Activin A *Koji Fujimoto, Makoto Kawakita, Kazuharu Kato, Yuji Yonemura, Tetsuya Masuda, Hiromitsu Matsuzaki, Jiro Hirose, Mitsuko Isaji, Hideki Sasaki, Tohru Inoue, and Kiyoshi Takatsuki* 1163

Solution Conformation of Forssman Antigen Probed by NOE and Exchange Interactions *Leszek Poppe, Janusz Dabrowski, and Claus-Wilhelm von der Lieth* 1169

Structural and Expression Analyses of Normal and Mutant mRNA Encoding Glycine Decarboxylase: Three-Base Deletion in mRNA Causes Nonketotic Hyperglycinemia *Shigeo Kure, Kuniaki Narisawa, and Keiya Tada* 1176

Uptake Characteristics of the $InsP_3$-sensitive and -insensitive Ca^{2+} Pools in Porcine Aortic Smooth-Muscle Cells: Different Ca^{2+} Sensitivity of the Ca^{2+}-Uptake Mechanism *Ludwig Missiaen, Humbert De Smedt, Guy Droogmans, Ingrid Declerck, Lutgart Plessers, and Rik Casteels* 1183

Effects of Interleukins on Plasma Arginine Vasopressin and Oxytocin Levels in Conscious, Freely Moving Rats *Yoshiyuki Naito, Junichi Fukata, Kazuo Shindo, Osamu Ebisui, Norihiko Murakami, Tomoko Tominaga, Yoshikatsu Nakai, Kenjiro Mori, Norman W. Kasting, and Hiroo Imura* 1189

Activation of α-Myosin Heavy Chain Gene Expression by cAMP in Cultured Fetal Rat Heart Myocytes *Mahesh P. Gupta, Madhu Gupta, Alexandre Stewart, and Radovan Zak* 1196

Calmodulin-Dependent Collagenase and Proteoglycanase Activities in Chondrocytes from Human Osteoarthritic Cartilage *M. Richard, P. Broquet, E. Vignon, M. J. Peschard, J. P. Carret, and P. Louisot* 1204

Evidence against a Laminin Receptor Role for Calsequestrin *Esther S-H. Choi, Peter D. Sullivan, and Dennis O. Clegg* 1208

Parathyroid Hormone Binding to Cultured Avian Osteoclasts *Anna Teti, René Rizzoli, and Alberta Zambonin Zallone* 1217

Expression of Exogenous DNA in Rat Liver Cells after Liposome-Mediated Transfection *in Vivo* *Barbara Leibiger, Ingo Leibiger, Dieter Sarrach, and Hartmut Zühlke* 1223

The Precursor of Mitochondrial Asparate Aminotransferase Is Imported into Mitochondria Faster than the Homologous Cystosolic Isoenzyme with the Same Presequence Attached *Claudia M. Hartmann, Jean-Michel Lindenmann, Philipp Christen, and Rolf Jaussi* 1232

Hepatic Glucocorticoid Receptor Behaves Differently when Its Hormone Binding Site Is Occupied by Agonist (Triamcinolone Acetonide) or Antagonist (RU486) Steroid Ligands *V. K. Moudgil and Madhavi Gunda* 1239

Reduction in the Ca^{2+}-Induced Ca^{2+} Release from Canine Cardiac Sarcoplasmic Reticulum following Endotoxin Administration *Maw-Shung Liu and Li-Ling Wu* 1248

Phosphorylation of Heart Phosphofructokinase by Ca^{2+}/Calmodulin Protein Kinase *Alan M. Mahrenholz, Linda Lan, and Tag E. Mansour* 1255

The Stimulatory Effect of PDGF on Vascular Smooth Muscle Cell Migration Is Mediated by the Induction of Endogenous Basic FGF *Yasufumi Sato, Ryoji Hamanaka, Junko Ono, Michihiko Kuwano, Daniel B. Rifkin, and Ryosaburo Takaki* 1260

2,3,7,8-Tetrachlorodibenzo-*p*-dioxin Increases Reliance on Fats as a Fuel Source Independently of Diet: Evidence That Diminished Carbohydrate Supply Contributes to Dioxin Lethality *Marci Lentnek, Owen W. Griffith, and Arleen B. Rifkind* 1267

Incorporation of tRNA into Normal and Mutant HIV-1 *L. Kleiman, S. Caudry, F. Boulerice, M. A. Wainberg, and M. A. Parniak* 1272

Cultured Epithelial Cells from Patients with Cystic Fibrosis Have an Increased Expression of the 14-kDa CA^{2+}-Binding Protein CFA *J. Keulemans, V. Van Heyningen, B. J. Scholte, J. Bijman, A. W. M. van der Kamp, M. Kansen, H. De Jonge, H. Galjaard, and A. T. Hoogeveen* 1281

Interleukin-4 Is a Potent Mitogen for Capillary Endothelium *Masakazu Toi, Adrian L. Harris, and Roy Bicknell* 1287

Transforming Growth Factor β1 Differentially Regulates α-Fetoprotein and Albumin in HuH-7 Human Hepatoma Cells *Kazuhiko Nakao, Keisuke Nakata, Satoru Mitsuoka, Akira Ohtsuru, Akio Ido, Masahiko Hatano, Yoshiaki Sato, Toshihiro Nakayama, Masayoshi Shima, Yukio Kusumoto, Toshihiko Koji, Taiki Tamaoki, and Shigenobu Nagataki* 1294

Introduction of Single-Stranded ADH Genes into *Drosophila* Results in Tissue-Specific Expression *Nancy L. L. Shen and William H. Sofer* 1300

Identification of the Leucine-Rich Amelogenin Peptide as the Translation Product of an Alternatively Spliced Transcript *Carolyn W. Gibson, Ellis Golub, Wendi Ding, Hitoyata Shimokawa, Marian Young, John Termine, and Joel Rosenbloom* 1306

The Existence of Unique B Structures in Polynucleotides with Alternating Purine–Pyrimidine Sequences *D. M. Loprete and K. A. Hartman* 1313

Bilateral Hydrophobic Zipper as a Hypothetical Structure Which Binds Acidic Ribosomal Protein Family Together on Ribosomes in Yeast *Saccharomyces cerevisiae* *Kunio Tsurugi and Kazuhiro Mitsui* 1318

Alternative, Simultaneous Complex I Mitochondrial DNA Mutations in Leber's Hereditary Optic Neuropathy *Donald R. Johns and Joy Berman* 1324

Bioluminescent Immunoassay Using a Monomeric Fab′–Photoprotein Aequorin Conjugate *Teruya Erikaku, Shuhei Zenno, and Satoshi Inouye* 1331

Translocation of the Yeast Dolichol-phosphate-mannose Synthase into Microsomal Membranes *Nicole Déglon, Andréa Krapp, Claude Bron, and Nicolas Fasel* 1337

Identification of G Protein-Coupled Endothelin Receptors in Cultured Bovine Endothelial Cells *Satoru Eguchi, Masamichi Kozuka, Shigehisa Hirose, Teizo Ito, Yukio Hirata, Fumiaki Marumo, and Hiromi Hagiwara* 1343

Author Index for Volume 174 1347

NOTICE

The Subject Index for Volume 174 will appear as part of a cumulative index for the year 1991.